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tively narrower band in the smaller (its breadth about 52 v. about 34 in head).

It will be seen from the above that the changes with age in *Citula dorsalis* are comparable with those in more specialized *Alectis*, etc., wherein the young are more extreme than the adult. The statement by Jordan and Evermann (1896, U. S. Nat. Mus., Bull. 47, 1, 929-930) concerning *Citula* (and apparently speaking of *C. dorsalis*):—"The young is more like *Caranx* in form and appearance than the adult, its later development carrying the fish farther in the direction of the extreme forms *Alectis*, *Hynnys* and *Selene*,"—should have been reversed.

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MR. BOULENGER ON THE GENUS *BABINA*.

In an article entitled "*Sur la conformation des phalangettes chez certaines Grenouilles d'Afrique*," published in *Comptes rendus des seances de l'Academie des Sciences*, Vol. 165, pp. 987-990, in 1918, Mr. Boulenger expresses certain opinions regarding *Babina* a genus proposed by me, in 1912, for two species of Dagger-Frogs, *Rana holsti* and *Rana subaspera*, from the Loo Choo Islands. Mr. Boulenger states that *Babina* is based upon a secondary sexual character which will not justify even subgeneric separation from the genus *Rana*. He continues:

"Ce genre *Babina* est fonde sur un caractere sexuel secondaire, le male etant pourvu d'une epine osseuse au pouce (l'extremite du premier metacarpien), percant la peau, epine dont la fonction est assurément la meme que celle des aiguillons cornes et caducs qui arment le doigt interne de certains *Leptodactylus* d'Amerique et qui servent a renforcer l'amplexus pendant l'accouplement, au point qu'on se demande comment la femelle ne succombe pas aux blessures d'une parielle etreinte. Cette epine au pouce de la "grenouille a

poignards," comme la nomme Van Denburgh, qui ne saurait a elle seule justifier le genre *Babina*."

In describing *Babina* (Proc. Cal. Acad. Sci., Ser. 4, Vol. III, p. 196) I stated: "What at first sight appears to be an innocent rudiment of a thumb is in reality a most formidable weapon.

"Mounted upon the inner side of the carpus is a long, curved, sharply pointed bone, which seemingly is the first metacarpal. It is about equal in length to the other metacarpals. This bony spur is completely covered by the soft tissues about it. When, however, pressure is made upon the end of the 'thumb,' this sheath of soft tissue slips back and leaves the bony weapon exposed and ready for use. When one of these frogs is caught, it strives to grasp a finger between its two hands, and when it succeeds,—as the first one did—the spurs are driven into the finger down to the bone. Several specimens of *Rana namiyei* were badly slashed by some *B. holsti* that were put into the same bag. One received a clean-cut wound forty-five millimeters long in addition to several minor injuries. One can have only feelings of pity for any snake which might succeed in swallowing one of these dagger-frogs.

"Both of these frogs have an unusual aggregation of glands above the insertion of the arm. It is probable that the secretion of these glands might often run down into wounds made by the spurs."

Regarding these statements Mr. Boulenger remarks:

"Van Denburgh parle des eperons de *Rana holsti* comme d'une arme defensive. L'explication de ces faits mal interpretes est tres simple: a defaut de femelles, les males, dans la frenesie du rut, se cramponnent a toutes sortes d'animaux, ou meme d'objects, tels qu'un baton qu'on leur tend, ainsi que, parmi les Anoures d'Europe, notre crapaud commun nous permet de le constater tous les ans au printemps."

In order to show that Mr. Boulenger's opinions regarding *Babina* are entirely untenable it is only necessary to state the fact that the "dagger" is fully developed in adult specimens of both sexes. Our collection includes females which contain eggs nearly ready for laying. These are armed with spurs as large and formidable as are to be found in males.

JOHN VAN DENBURGH,
San Francisco, Calif.

A NOTE ON *BABINA*, THE DAGGER-FROG.

Some time ago the American Museum received from Nago, Okinawa Island, a large but sexually immature female specimen of *Babina holsti* (Boulenger). *Babina* was originally described by Thompson¹ who considered the presence of the "dagger" (a rudimentary thumb or prepollex²) as sufficient reason for separating *Rana holsti* Boulenger and *R. subaspera* Barbour from their congeners. Recently Boulenger³ in referring *Babina* to the synonymy of *Rana* has stated that the "dagger" is only a secondary sexual character peculiar to the males. This statement must have been an oversight on Boulenger's part for his type specimen (Brit. Mus. 92. 9. 3. 19) of *R. holsti* is a female with well-developed dagger⁴. Further our immature female has a very distinct "dagger" and Dr. John Van Denburgh has informed me by letter that several of the specimens in the series reported upon by Thompson and later by himself are adult with "daggers" as large as those of the males.

Other species of frogs besides those referred to *Babina* are capable of exposing the terminal phalanges

¹Prodrome of a Description of a New Genus of Ranidae from the Loo Choo Islands. Herpetological Notes, No. 1, June 15, 1912, p. 2.

²The homologies of this bone have never been satisfactorily determined.

³C. R. Acad. Sci. Paris, CLXV, 1917, p. 989.

⁴Stejneger, Bull. U. S. Nat. Mus., No. 58, 1907, p. 105, fig. 84.

⁵See Barbour, Occ. Papers Mus. Zool., Univ. Mich., No. 44, 1917.